

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEFAN DEGENDT and PETER SNEE

Appeal No. 2006-0363
Application No. 09/022,834

ON BRIEF

Before KIMLIN, TIMM and JEFFREY T. SMITH, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 27-39 and 41-60. Claim 27 is illustrative:

27. A method for removing organic contaminants from a substrate, the organic contaminants resulting from a previous lithographic step, the method comprising the steps of:

contacting at least one side of said substrate with a liquid comprising water, ozone and an additive acting as a scavenger, wherein the proportion of said additive in said liquid is less than 1% molar weight of said liquid; and

maintaining said liquid at a temperature less than the boiling point of said liquid.

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The examiner relies upon the following references as
evidence of obviousness:

Stanford et al. (Stanford)	5,244,000	Sep. 14, 1993
Kashiwase et al. (Kashiwase)	5,378,317	Jan. 3, 1995

Sehested et al. "Decomposition of Ozone in Aqueous Acetic Acid Solutions (pH 0-4)," J. Phys. Chem., 96(2), pp. 1005-09 (1992).

Kern, "Future Needs of Processing Chemicals," Handbook of Semiconductor Wafer Cleaning Technology, pp. 599-01 (1993).

Appellants' claimed invention is directed to a method for removing organic contaminants from a substrate. The method involves contacting the substrate with a solution of water, ozone and a scavenger additive, such as a carboxylic acid, a phosphonic acid and salts thereof.

Appealed claims 27, 28, 30-32, 34-39, 41-43, 48, 49, 51-54, 57 and 60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kashiwase in view of Sehested. Claims 33, 47 and 55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the stated combination of references further in view of Kern, whereas claims 29, 44-46, 50, 58 and 59 stand rejected under Section 103(a) as being unpatentable over Kashiwase in view of Sehested, Kern and Stanford.

Appellants submit at page 2 of the principal brief that "[t]he claims stand or fall together as a single group for the

purposes of this appeal.” Accordingly, all the appealed claims stand or fall together with claim 27.

We have thoroughly reviewed each of appellants’ arguments for patentability, as well as the specification data relied upon in support thereof. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of Section 103 in view of the applied prior art. Accordingly, we will sustain the examiner’s rejections for essentially those reasons expressed in the answer, and we add the following for emphasis only.

There is no dispute that Kashiwase, like appellants, discloses a method for removing organic contaminants from a substrate comprising contacting the substrate with a liquid comprising water and ozone. Kashiwase, as recognized by the examiner, does not teach the inclusion of a scavenger in the solution, but appellants do not contest the examiner’s factual finding that Sehested teaches that acetic acid, one of the claimed scavenger additives, stabilizes ozone in solution by acting as an OH radical scavenger. Accordingly, based on the combined teachings of Kashiwase and Sehested, we fully concur with the examiner’s legal conclusion that “it would have been

obvious to one skilled in the art at the time of claimed invention to combine Sehested et al.'s teaching into Kashiwase's method to stabilize ozone as taught by Sehested et al. (Page 4 of answer, fifth paragraph).

Appellants contend that "none of the cited art suggests that stabilization of ozone would lead to increased cleaning efficiency as observed by the present inventors" (page 3 of principal brief, first full sentence). However, inasmuch as Sehested evidences that it was known in the art that appellants' scavenger stabilizes the decomposition of ozone in solution, we are satisfied that one of ordinary skill would have had a reasonable expectation that adding a scavenger to the ozone solution of Kashiwase would increase the cleaning efficiency. It is well settled that all that is required for a finding of obviousness under Section 103 is a reasonable expectation of success, not absolute predictability. In re O'Farrell, 853 F.2d 894, 903-04; 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

Appellants point to specification data which demonstrates that the claimed method provides an enhanced cleaning efficiency relative to ozone solutions that do not contain the scavenger additive. However, appellants have not established on this record that the results would have been truly unexpected to one

of ordinary skill in the art, particularly in light of the Sehested disclosure. In re Merck & Co., 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); In re Klosak, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972). Indeed, it would seem that the results reported in the present specification would have been expected by one of ordinary skill in the art, and expected results are evidence of obviousness. In re Skoner, 517 F.2d 947, 950, 186 USPQ 80, 82 (CCPA 1975).

Appellants also maintain "without some recognition that the rate of ozone decomposition compared to the rate of cleaning is such that ozone decomposition detrimentally affects cleaning efficiency, there can be no motivation to stabilize the ozone through the addition of a scavenger nor any reasonable degree of assurance that doing so would have the kind of beneficial effect observed by the applicants" (page 4 of principal brief, penultimate paragraph). However, we are confident that one of ordinary skill in the art, knowledgeable that the addition of a scavenger inhibits the decomposition of ozone in water, would have found it obvious to add it to the cleaning solution of Kashiwase in order to ensure efficiency. Moreover, we find that one of ordinary skill in the art would have readily observed the decomposition of ozone in the cleaning solution of Kashiwase and

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would have resorted to the known solution for solving the problem. In re Ludwig, 353 F.2d 241, 244, 147 USPQ 420, 421 (CCPA 1965).

In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CATHERINE TIMM)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
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JEFFREY T. SMITH)	
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